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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|----------------------------|-------------|----------------------|---------------------|------------------|
| 10/076,333 | 02/19/2002 | Hiitoshi Yamada | 1082.1042 | 2004 |
| 21171 | 7590 | 10/24/2003 | EXAMINER | |
| STAAS & HALSEY LLP | | | DONG, DALEI | |
| SUITE 700 | | | ART UNIT | PAPER NUMBER |
| 1201 NEW YORK AVENUE, N.W. | | | | |
| WASHINGTON, DC 20005 | | | 2875 | |

DATE MAILED: 10/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/076,333 | YAMADA ET AL. | |
| | Examiner | Art Unit | |
| | Dalei Dong | 2875 | |

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 04 March 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.
- 4) Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-11 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 19 February 2002 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. 10/076,333.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Examiner withdrew the election/restriction and will examine the application as presented.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-11 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 31, 37 and 39 of U.S. Patent No. 6,577,060 to Tokai in view of U.S. Patent No. 5,514,934 to Matsumoto. Tokai reference discloses the claimed invention except for at least two discharge electrode, it is inherent that the discharge tube of Tokai to have at least two electrode in order to accomplish the gas discharge, further it is old and well known in the art as disclosed by the Applicant to have at least two electrode outside of the discharge tube as shown by U.S. Patent No. 5,514,934 to Matsumoto. Therefore, it would have been obvious to one having ordinary skill in the art to provide at least two electrodes on the outer surface of the discharge tube.

Claim Objections

4. Claims 4-11 are objected to because of the following informalities: the preamble of dependent claims 4-11 differentiate from the preamble of independent claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
6. Claims 1-11 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,514,934 to Matsumoto in view of U.S. Patent No. 6,612,889 to Green.

Regarding to claims 1-2, Matsumoto discloses in Figure 1, "a fluorescent lamp 1, a glass bulb 2 has a straight cylinder form having dimensions of, for example, a diameter of 10 mm and a length of 220 mm, and a fluorescent substance layer 3 is formed on almost the entire internal surface of the glass bulb 2. A rare gas such as xenon at a pressure such as 70 Torr is enclosed in the glass bulb 2. A part having a width such as approximately 4 mm along the entire length of the glass bulb 2, on which the fluorescent substance layer 3 is not formed, constitutes a light output part 4 for emitting the light generated within the glass bulb 2 to the outside. A pair of external electrodes 5a and 5b having a width such as approximately 12 mm are mounted on the external peripheral

surface of the glass bulb 2 along the entire length thereof except at the ~~light~~ output part 4 spaced apart by, for example, approximately 2 mm less than the width of the ~~light~~ output part 4 on the opposite side to the ~~light~~ output part 4. An insulating member 8 for preventing a dielectric breakdown between the ~~electrodes~~ 5a and 5b on the external peripheral surface of the lamp is formed on the external surface of the glass in the space between the external ~~electrodes~~ 5a and 5b. A power source 7 for supplying electric power is connected to the external ~~electrodes~~ 5a and 5b through lead wires 6a and 6b” (column 5, lines 45-67).

However, Matsumoto does not disclose an electron emission film formed on the entire inner surface of the tube and the electron emission film is made of magnesium oxide. Green teaches “to obtain an increase in luminosity and radiation transport efficiency, in an embodiment of the present invention, the shell 50 of each micro-component 40 is at least partially coated with a secondary emission enhancement material. Any low affinity material may be used including, but not limited to, ~~magnesium~~ oxide and thulium oxide. One skilled in the art would recognize that other materials will also provide secondary emission enhancement. In another embodiment of the present invention, the shell 50 is doped with a secondary emission enhancement material. It is contemplated that the doping of shell 50 with a secondary emission enhancement material may be in addition to coating the shell 50 with a secondary emission enhancement material. In this case, the secondary emission enhancement material used to coat the shell 50 and dope the shell 50 may be different” (column 9, line 62 to column 10, line 10).

Matsumoto also teaches in “in addition to, or in place of, doping the shell 50 with a secondary emission enhancement material, according to an embodiment of the present invention, the shell 50 is doped with a conductive material. Possible conductive materials include, but are not limited to silver, gold, platinum, and aluminum. Doping the shell 50 with a conductive material provides a direct conductive path to the gas or gas mixture contained in the shell and provides one possible means of achieving a DC light-emitting panel” (column 10, lines 11-19).

Matsumoto further teaches “in another embodiment of the present invention, the shell 50 of the micro-component 40 is coated with a reflective material. An index matching material that matches the index of refraction of the reflective material is disposed so as to be in contact with at least a portion of the reflective material. The reflective coating and index matching material may be separate from, or in conjunction with, the phosphor coating and secondary emission enhancement coating of previous embodiments. The reflective coating is applied to the shell 50 in order to enhance radiation transport. By also disposing an index-matching material so as to be in contact with at least a portion of the reflective coating, a predetermined wavelength range of radiation is allowed to escape through the reflective coating at the interface between the reflective coating and the index-matching material. By forcing the radiation out of a micro-component through the interface area between the reflective coating and the index-matching material greater micro-component efficiency is achieved with an increase in luminosity. In an embodiment, the index matching material is coated directly over at least a portion of the reflective coating. In another embodiment, the index matching

material is disposed on a material layer, or the like, that is brought in contact with the micro-component such that the index matching material is in contact with at least a portion of the reflective coating. In another embodiment, the size of the interface is selected to achieve a specific field of view for the light-emitting panel" (column 10, lines 20-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilize the electron emission layer or secondary emission enhancement material of Green to form on the entire inner wall of the discharge tube of Matsumoto in order to obtain an increase in luminosity and radiation transport efficiency and further control and direct the emitted light in the desired direction.

Regarding to claim 3, Matsumoto discloses two common electrodes extending in a longitudinal direction of the tube, however, Matsumoto does not discloses a plurality of separate electrode that oppose to the common electrode.

Matsumoto teaches in Figure 8, "a plurality of electrode pairs are arranged on the external surface of the glass bulb 2 in the longitudinal direction thereof. In this case, even in a long lamp, the UV rays generation amount becomes uniform at any part in the longitudinal direction, and an improved luminance distribution over the entire length of the lamp can be obtained. In the fluorescent lamp 1 shown in FIGS. 1a and 1b or FIGS. 6a and 6b, of course, a plurality of electrode pairs can be arranged in the longitudinal direction of the glass bulb 2 in the same manner as described above" (column 9, lines 30-39).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the separate electrode of Matsumoto along the opposite side of the common electrode of Matsumoto for the discharge tube of Matsumoto in order to obtain the capability of selectively generating a discharge in a plurality of parts and large light output and a stable discharge.

Regarding to claims 4-11, claims 4-11 drawn to a method of manufacturing a discharge tube and since the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, these limitations had not been given patentable weight.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following prior art are cited to further show the state of the art of composition of a discharge tube.

U.S. Patent No. 3,596,095 to Leach.

U.S. Patent No. 3,947,722 to Strom.

U.S. Patent No. 5,006,758 to Gellert.

U.S. Patent No. 5,889,366 to Tokokawa.

U.S. Patent No. 6,577,060 to Tokai.

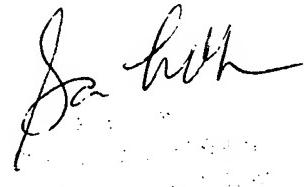
U.S. Patent No. 6,633,117 to Shinoda.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalei Dong whose telephone number is (703)308-2870. The examiner can normally be reached on 8 A.M. to 5 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (703)305-4939. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

D.D.
October 16, 2003

A handwritten signature in black ink, appearing to read "Sandra O'Shea". Below the signature, there is a faint, illegible printed name that appears to be "U.S. Patent and Trademark Office".